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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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02/09/2005

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EXAMINER

BARRY, CHESTER T

ART UNIT	PAPER NUMBER
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1724

DATE MAILED: 02/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/733,392

Applicant(s)

HAASE, RICHARD ALAN

Examiner

Chester T. Barry

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11/17/03, 4/4/04.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 33,35,37,38,40,55,67 and 73 is/are allowed.
- 6) ☒ Claim(s) 1-8,10-16,22,24-32,36,44,51,58 and 68-72 is/are rejected.
- 7) ☒ Claim(s) 19,30,34,41,45-48,51-54,59-61,68 and 71 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7/6/04, 11/17/03

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Continuation of Disposition of Claims: Claims pending in the application are 1 - 8, 10-16, 19, 22, 24-38, 40 - 41, 44 - 48, 51-55, 58-61, 67-73 .

Certificate of Service

USPTO records indicate that "JoAnn Villamizer" [sic, JoAnn Villamizar] is a patent attorney at Ciba Specialty Chemicals, the Third Party Requester.

Miscellaneous Remark

The phrase "claim construction" refers to "claim interpretation" or "determination of the metes and bounds of the scope of a patent claim."

Response to Owner's Arguments

No motivation to combine prior art teachings

Owner/applicant argues at page 13¹ that the "combination of references [sic, claimed invention?] would not have been obvious to one of ordinary skill in the art at the time of the invention." This articulation is taken as the argument that the prior art does not suggest combination of the various prior art teachings relied upon by the examiner, rather than as the argument that if combined, the combined teachings would not teach or suggest the claimed invention as a whole.

Combined teachings are not enabling

Owner/applicant argues at page 13 that the "combination of references are not enabling and would require undue experimentation to reduce to practice." This argument is not persuasive at least for the reason that owner has not thoroughly

¹ Unless otherwise indicated, page citations to owner's response refer to the response filed 11/17/03.

analyzed the relevant prior art teachings under the factors set forth in Ex parte Forman (citation available upon request).

Secondary Considerations – Copying by Others

Owner/applicant argues at page 13 that "Applicant's invention was copied by Allied Colloids in January 1997 after being disclosed to them in November 1996."

Thermophilic Temperature Range

In response to the examiner's rejection of various claims reciting a temperature of 115°C for reasons substantially related to patentability, in this case rejection under 35 USC Sec. 112(2nd), owner/applicant deleted the offending temperature limitation from the claims notwithstanding the arguments set forth at page 14 (middle) through page 15.

Claims 22, 24-32 Rejected under §112(1st) and Objection under §§251,132

The rejection/objections are withdrawn in light of owner/applicant's amendment of claim 22. Claim 22's broadly-defined recitation of either a) contacting the sludge with a polymeric quaternary ammonium compound along with a generic polyacrylamide or b) contacting the sludge first with a polymeric quaternary ammonium compound and then with a generic polyacrylamide is supported by the method one invention² and the method two invention,³ respectively.

² Polyamine added with a **cationic** polyacrylamide.

³ Polyamine added first followed by addition of **anionic** polyacrylamide.

"Allyl" / DADMAC Family rejections

Claims 2, 3, 26, 30, 36, 44, 51, 58, 68 are rejected under 35 USC Sec. 112(2nd) for failing to particularly point out and distinctly claim the invention. The phrase "(DADMAC) family of compounds" cannot be understood because di-allyl di-methyl ammonium chloride is but one (and only one individual) compound, so speaking of a "family of compounds" makes no sense to the skilled artisan.

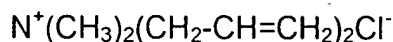
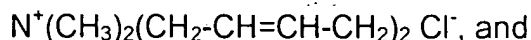
Owner/applicant argues at page 17 that the allyl group includes

"Butyl [$\text{CH}_2=\text{CH}-\text{CH}_2-\text{CH}_2$]+" [sic, 3-butenyl],

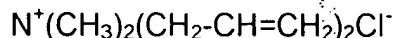
"Butyl, 2° carbon [$\text{CH}_2-\text{CH}=\text{CH}-\text{CH}_2$]+" [sic, 2-butenyl] and

"Propyl [$\text{CH}_2=\text{CH}-\text{CH}_2$]+" [sic, 2-propenyl].

Owner/applicant argues further that the foregoing group could be "combined" with "di-methyl amine [sic, ammonium chloride ?]" to "create 3 family members." Presumably, this last argument is that the three family members would be:



The foregoing argument is not persuasive. Allyl means the radical 2-propenyl, i.e., $-\text{CH}_2-\text{CH}=\text{CH}_2$.⁴ Di-allyl di-methyl ammonium chloride is, therefore,



Owner/applicant is incorrect in the view that the structure



⁴ Hack's Chemical Dictionary, "allyl."

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would be a type of di-allyl di-methyl ammonium chloride. The meaning of "allyl" in the context of diallyl dimethyl ammonium chloride does not permit one to insert one or more methylene groups between the allyl group and the amine group. For this reason, neither a butenyl nor a "butyl" group (as even less persuasively advanced by owner/applicant) is an example of an allyl group any more than the ethyl radical is an example of a methyl radical simply because one needs only to add a methylene group to the methyl group to produce (on paper) an ethyl group. The so-called "butyl" compounds, more properly the butenyl compounds shown above, simply do not fall within the scope of a di-allyl di-methyl ammonium compound.

Moreover, owner/applicant's misunderstanding that a "butyl" group may include radicals that are not fully saturated reduces the persuasiveness of any chemical nomenclature-based argument advanced by him. Even freshman-level college organic chemistry curricula make clear that "butyl" radicals are never unsaturated.

In short, there is no "family" of compounds that can be described as DADMAC: There is but one compound that is DADMAC. That compound is di-allyl di-methyl ammonium compound. Had applicant understood DADMAC to be an acronym for, di-*alkyl* di-methyl ammonium compound, a stronger argument might have been made here. There is no support, however, for that construction of the term DADMAC in this case.

The foregoing remarks and analysis are equally applicable to "epi-DMA family of compounds. Epi-DMA is but one compound: Epichlorohydrin-dimethyl amine. "Epi-DMA" in this case is an amine group NH_3 to which nitrogen atom is attached an

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epichlorohydrin radical and two methyl (CH₃-) groups. That's it: One compound and one compound only. There is no "family of compounds" – it's just one compound, i.e., epi-DMA.

The arguments submitted on April 4, 2004, on this point were also carefully considered before reaching the foregoing conclusions. The examiner declines to comment on owner/applicant's remark concerning the doctrine of equivalence (4/4/04, at page 21. Owner/applicant's statement that his objective is to broaden the claimed scope to include "equivalents to DADMAC and Epi-DMA" is an implicit acknowledgement that he intends for the phrases, "DADMAC family of compounds" and "Epi-DMA family of compounds" to cover certain non-DADMAC and non-Epi-DMA compounds. This owner/applicant understanding serves only to clearly point out further the confusion surrounding the scope of the recitations, "DADMAC family of compounds" and "Epi-DMA family of compounds."

The examiner notes with appreciation owner/applicant's helpful remarks (4/4/04 at page 21-22) concerning the meaning of "compound" and "family." Those remarks merely serve, however, to remove all doubts that owner/applicant's position is that "family of compounds" is indeed intended to cover more than one compound. Accordingly, the rejection under Sec.112(2nd) is maintained.

Sec.112(2nd) – Claim 16 – "either . . . and/or"

Claim 16 is rejected under 35 USC Sec. 112(2nd) for failing to particularly point out and distinctly claim the invention.

Claim 16 now reads in pertinent part: "either the polyacrylamide and/or the polymeric quaternary ammonium compound are used" in specified forms. This grammatical form still cannot be understood. For one thing, "either ... and" is not an acceptable form of grammar. It is not clear what it means. Adopting the nomenclature "PA" for "polyacrylamide" and "PQAC" for "polymeric quaternary ammonium compound," various grammatically correct forms do exist. They include:

- 1) "the PA and the PQAC are used" in specified forms;
- 2) "the PA or the PQAC is used" in specified forms; or
- 3) "one or both of the PA and PQAC are used" in specified forms.

Owner/applicant did not elect one of these self-evident choices. Instead, by using the compound conjunction "either ... and/or," it is hopelessly confusing whether the phrase now recited is intended to mean one of 1, 2, or 3 above, or whether 4) was intended:

4) "either only one of the PA and PQAC is used [in specified forms], or both the PA and the PQAC are used [in specified forms]." It's not clear what this means, either.

Correction is required.

Sec. 112 (1st para) – lack of written description

Claim 16 is rejected under 35 USC Sec. 112(first paragraph) for failure of the application to describe the claimed subject matter.

Claim 16 covers inter alia the situation in which in a sludge dewatering method, the polymeric quaternary ammonium compound **and** the polyacrylamide are both used in emulsion form. The original application does not describe or support use of polymeric

quaternary ammonium compound in emulsion form and polyacrylamide in emulsion form. With respect to the form of these materials, the application as filed appears to support use of a **blend** of polymeric quaternary ammonium compound and polyacrylamide in emulsion form. When individual polymers are used, i.e., quaternized polyacrylamide and cationic polyacrylamide, only the solution form and the dry form are described. See USP 5846435.⁵ Support for this "emulsion wording" could not be found "throughout the examples, col. 7 line 49 – col 9 line 49" as urged by owner applicant at page 14 of 22 filed 4/4/04.

Dewatering, or Preparing for Subsequent (Unclaimed) Dewatering?

Claims 1 – 16 are rejected under 35 USC Sec. 112(2nd) for failing to particularly point out and distinctly claim the invention. The claim is ostensibly directed to a method for dewatering sludge,⁶ but none of Claims 1 – 16 actually positively recites the step of dewatering the sludge, i.e., the step of removing water from the sludge. It is not clear whether addition of these chemicals to a thermophilic biological sludge alone would constitute infringement, or whether one must follow-through with some degree of water removal or separation from the sludge in order to meet the implied limitation of dewatering that is suggested by the claim preamble. At best, the claims appear to be directed to preparing a sludge for subsequent dewatering through the addition of

⁵ Owner/applicant in USP 5846435 wrote: "The polyacrylamide blend for dewatering is used as an emulsion or in dry form. The individual polymers (i.e. quaternized polyacrylamide and cationic polyacrylamide) are in solution or in dry form."

⁶ Please see claim 1 preamble, for example.

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various dewatering chemicals and additives, such as a polymeric quaternary ammonium chloride compound and polyacrylamide.

37 CFR 1.173(d) Objection

Objection is made to Claim 15 under 37 CFR 1.173(d) for want of the words "a cationic" to be underlined. The phrase "a cationic" appearing in claim 15 (seven times amended) does not appear in claim 15 as issued and therefore must be underlined.

Claim Objection

Objection is made to Claim 19 for duplication of the phrase, "of claim" at line 1 ("The method of claim of claim 1 . . . "). Correction is required.

Objection is made to Claim 30 for recitation of "consisting if" [sic, consisting of] at line 2. Correction is required.

Objection is made to Claims 34, 47, 54, 61 and 71 for recitation of "compound comprise a molecular weight of . . . " [sic, compound has a molecular weight of . . .] at line 2. Correction is required.

Objection is made to Claim 41 and 48 for recitation of "comprising cationic or anionic moiety" [sic, "comprising **a** cationic or anionic moiety"]. Correction is required.

Objection is made to Claims 51 and 68 for recitation of "at least one selected" [sic, "at least one **compound** selected"] and "consisting of the di-allyl" [sic, "consisting of **the** di-allyl"]. Correction is required.

Objection is made to Claims 53, 60 for recitation of "wherein a concentration" [sic, "wherein **the** concentration"]. Correction is required.

Objection is made to Claim 59 for recitation of "wherein a ratio" [sic, "wherein **the** ratio"]. Correction is required.

"The" Cationic Polyacrylamide

Claims 25, 27, 29, 31 are rejected under 35 USC Sec. 112(2nd) for failing to particularly point out and distinctly claim the invention.

The expression, "the cationic polyacrylamide," recited in claim 27 lacks antecedent basis in claim 25 from which claims 27 depends. Antecedent basis is also not found in claim 22, from which claim 25 depends. Claim 22 is **not** rejected on this basis.

The expression, "the cationic polyacrylamide," recited in claim 31 lacks antecedent basis in claim 29 from which claims 31 depends. Antecedent basis is also not found in claim 22, from which claim 29 depends. Claim 22 is **not** rejected on this basis.

Compound / Moiety Antecedence

Claim 68 is rejected under 35 USC Sec. 112(2nd) for failing to particularly point out and distinctly claim the invention. The recited expression, "the quaternary ammonium moiety" lacks antecedent basis in claim 67. "[T]he quaternary ammonium **compound**" is suggested. Correction is required.

Compound / Moiety Antecedence

Claims 69-70 are rejected under 35 USC Sec. 112(2nd) for failing to particularly point out and distinctly claim the invention. The recited expression, "the polymer" lacks antecedent basis in claim 67. "[T]he polymeric quaternary ammonium **compound**" is suggested. Correction is required.

"Sludge / Sludge Composition Antecedence

Claims 68-71 are rejected under 35 USC Sec. 112(2nd) for failing to particularly point out and distinctly claim the invention. The recited expression, "the sludge" lacks antecedent basis in claim 67. "[T]he sludge **composition** of claim 67" is suggested. Correction is required.

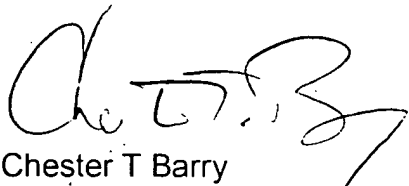
Sludge / Sludge Composition Antecedence

Claims 22, 24-32, 72 are rejected under 35 USC Sec. 112(2nd) for failing to particularly point out and distinctly claim the invention. These claims recite, "to form a floc that **dewaters well**" (emphasis added). The term "dewaters well" in claim 22 is a relative term which renders the claim indefinite. The term "dewaters well" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Correction is required. It is suggested that the expression "that dewaters well" be deleted from claim 22.

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Claims Allowable Over Art

In reliance on Owner/Applicant's arguments of record, the examiner withdraws all prior art-based rejections. That is, claims 1 – 8, 10-16, 19, 22, 24-38, 40 – 41, 44 – 48, 51-55, 58-61, 67-73 are not rejected over prior art. Of these, the claims that are not rejected or objected to on other grounds are allowable. For those claims which are objected to or rejected on at least one non-art basis, e.g., Sec.112(2nd paragraph), the claims would be allowable if amended to overcome said at least one basis. Reasons for Indicating Allowable Subject Matter: The prior art of record fails to teach or fairly suggest the improved dewaterability of thermophilic bacterial sludges to which a polymeric quaternary ammonium sludge conditioner has been added, the nonobviousness of which improvement is supported in part by owner/applicant's material representation of "copying" of the claimed invention by at least one of owner/applicant's commercial competitors after the invention was – as represented – disclosed to it in November, 1996.



Chester T Barry

Examiner

6/26/04, 2/4/05

571-272-1152